

OCDSB Night School Math



COURSE NAME: Grade 12 Calculus and Vectors; University

COURSE CODE: MCV4U

LOCATION: Woodroffe High School

DATE: September 26, 2017 – December 19, 2017

TEACHER: Katie Vlug, katie.vlug@ocdsb.ca

COURSE OVERVIEW: This course builds on students' previous experience with functions and their developing understanding of rates of change. Students will solve problems involving geometric and algebraic representations of vectors and representations of lines and planes in three dimensional space; broaden their understanding of rates of change to include the derivatives of polynomial, sinusoidal, exponential, rational, and radical functions; and apply these concepts and skills to the modelling of real-world relationships. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended for students who choose to pursue careers in fields such as science, engineering, economics, and some areas of business, including those students who will be required to take a university-level calculus, linear algebra, or physics course.

Prerequisite: Functions, Grade 12, University

Course Strands & Overall Expectations:

A. RATE OF CHANGE

1. demonstrate an understanding of rate of change by making connections between average rate of change over an interval and instantaneous rate of change at a point, using the slopes of secants and tangents and the concept of the limit;
2. graph the derivatives of polynomial, sinusoidal, and exponential functions, and make connections between the numeric, graphical, and algebraic representations of a function and its derivative;
3. verify graphically and algebraically the rules for determining derivatives; apply these rules to determine the derivatives of polynomial, sinusoidal, exponential, rational, and radical functions, and simple combinations of functions; and solve related problems.

B. DERIVATIVES AND THEIR APPLICATIONS

1. make connections, graphically and algebraically, between the key features of a function and its first and second derivatives, and use the connections in curve sketching;
2. solve problems, including optimization problems, that require the use of the concepts and procedures associated with the derivative, including problems arising from real-world applications and involving the development of mathematical models.

C. GEOMETRY AND ALGEBRA OF VECTORS

1. demonstrate an understanding of vectors in two-space and three-space by representing them algebraically and geometrically and by recognizing their applications;
2. perform operations on vectors in two-space and three-space, and use the properties of these operations to solve problems, including those arising from real-world applications;
3. distinguish between the geometric representations of a single linear equation or a system of two linear equations in two-space and three-space, and determine different geometric configurations of lines and planes in three-space;
4. represent lines and planes using scalar, vector, and parametric equations, and solve problems involving distances and intersections.

ASSESSMENT AND EVALUATION:

The **report card grade** represents a student's achievement of the overall curriculum expectations, as demonstrated to that point in time. Determining a report card grade will involve the teachers' professional judgement and interpretation of all available evidence (student products, observations, as well as conversations) and should reflect the student's *most consistent* level of achievement, with special consideration given to *more recent* evidence.

Students will be evaluated using levels as outlined below:

Level 4	Sophisticated and thorough achievement of expectations (80 – 100%)
Level 3	Achieved the expectations (70 – 79%)
Level 2	Approaching the expectations (60 – 69%)
Level 1	Limited understanding of concepts (50 – 59%)
R	Remedial- additional learning required before expectation is met (below 50%)

The final grade will be based on:

Term Work	70%
Final Exam	30%

- The final exam may be broken into 2 halves – one for Calculus and one for Vectors – to be determined

Contact Information:

E-mail: katie.vlug@ocdsb.ca
Website: vlug.wikispaces.com

Please sign below in order to indicate that you have read the above information:

Student Name (please print): _____

Parent Signature: _____

If one (or both) of your parents has an **email address** that they check regularly, please provide it:

Parent/Guardian #1: _____

Please print clearly

Parent/Guardian #2: _____